



Source Water Assessment Program (SWAP) Report for Warwick Community School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

Date Prepared:
June 15, 2001

Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	Warwick Community School
<i>PWS Address</i>	Winchester Road
<i>City/Town</i>	Warwick, Massachusetts
<i>PWS ID Number</i>	1312012
<i>Local Contact</i>	Ms. Dayle Doiron
<i>Phone Number</i>	413-498-2911

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	1312012-01G	115	428	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Well

Warwick Community School is a rural, elementary school located on the east side of Winchester Road (State Route 78) in Warwick. The school student and staff population is approximately 100 people per day and is served by a single potable supply well (Well #1) located south of the school.

The well has a Zone I protective radius of 115 feet and an Interim Wellhead Protection Area (IWPA) radius of 428 feet based on pumping test data and Zone I restrictions. The

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

well was tested and was shown to have a Safe Yield of 12,960 gallons per day (9.0 gpm) under the New Source Approval Process. However, due to Zone I land use restrictions that allow only drinking water activities within the Zone I, the approved rate for the well is restricted to 1,260 gpd (0.875 gpm). Well #1 is a 6-inch diameter well drilled to a depth of approximately 440 feet below ground. The driller's log states gravel and boulders were encountered from ground level to approximately 16 feet below ground, where bedrock was encountered. The bedrock was apparently highly weathered and the borehole was filled with cement to 70 feet and redrilled to stabilize the walls of the boring. Forty feet of casing was cemented into place with 24-inches above ground. The geologic mapping of the area identified the bedrock as a quartz-mica-sillimanite schist and gneiss of the Ammanousuc volcanics series dating from the Ordovician. Variable amounts of epidote, garnet and shpene are noted. The water does not require and is, at the time this report was prepared, not treated. You may request additional information regarding the quality of the water, from the local contact listed in Table 1.

Please refer to the attached maps of the Zone Is and IWPAs and Table 2 for additional assessment information. Please note that the "ortho-photograph" in the attached map was taken prior to the construction of the school and therefore does not show the school. The school is located north of the well and parts of the playing field, the basketball court and the leach field are within the IWPA.

2. Discussion of Land Uses in the Protection Areas

During the assessment, it was noted the few land uses and activities within the drinking water supply protection areas are potential sources of contamination.

Key issues include:

1. **Septic System components in the IWPA**
2. **Floor drain in boiler room**

The well is located in an aquifer with a high vulnerability to contamination due to the absence of a significant hydrogeologic barrier to prevent contaminant migration. The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of at least one moderate threat land use or activity in the IWPA, as seen in Table 2.

1. **Septic systems** - The septic system leach field is located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems or discharge from the boiler room are also potential sources of contamination to the water supply.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Septic System components (leachfield)	No	Yes	Moderate	Refer to attached septic system fact sheet.
Floor Drain in the boiler room to septic system	No	Yes	Moderate	Floor drain must be protected from accidental spills
Passive Recreation	No	Yes	Low	Athletic Fields

- **-For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a Very Small Quantity Generator.
- ✓ Refer to the appendices for more information regarding septic systems. The school is currently not registered as a generator of hazardous waste or waste oil. Review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" to determine regulatory requirements. If you wish to participate in the Town household hazardous waste pick-up day.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis.

2. **Floor drain in the boiler room** – Floor drains may be required in boiler rooms to provide drainage in the event of a plumbing failure. If there is a potential for hazardous materials to flow accidentally into the floor drain, however, preventive measures should be taken. Floor drains in an area that contains hazardous materials must be discharged to a sewer or a tight tank. The boiler room at the Warwick Community School has a floor drain that is assumed to discharge to the septic system.

Recommendations:

- ✓ Oil lines from the tank to the boiler can be sleeved so that any leaks would drain back to the tank or minimal oil would leak to the boiler room. A written policy and plan should be in place during maintenance operations, especially when oil filters are changed. Request that your boiler maintenance contractor use containment, protect the drain and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. Please note that boiler blow down generated during routine maintenance cannot be discharged through the floor drain and must be disposed of off site.

Other activities that were noted during the assessment were the multiple earth removal operations. The sand and gravel mining operations appear to be located down gradient to the well. The school's oil tank was constructed in accordance with current standards for containment and is located outside of the IWPA.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Warwick Community School is commended for current protection measures.

Please review and adopt the key recommendations listed above and as follows:

Zone I and IWPA:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I. Look for evidence of unauthorized access.
- ✓ Monitor activities and if there is evidence of increased activity or access, consider gating the wellhead.
- ✓ Post drinking water supply signs key location such along the access road and in the parking area.

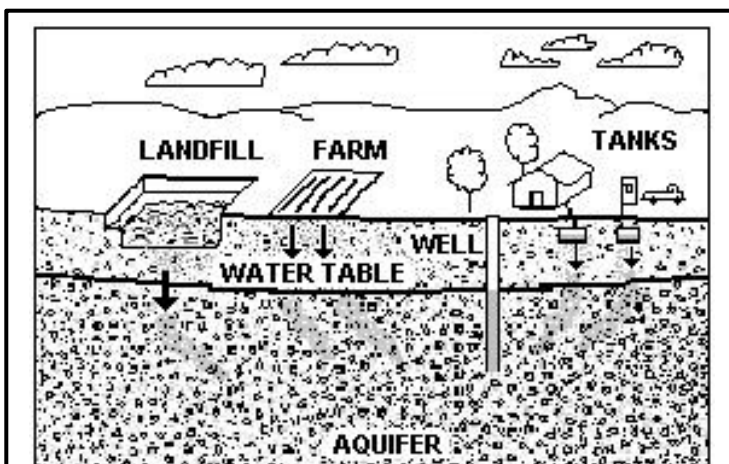


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, the town library and the local media.

- ✓ Provide information to staff about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Use Best Management Practices (BMPs) for the use of fertilizer lawn care, pesticides and household hazardous waste.

Training and Education:

- ✓ Incorporate groundwater education into school curriculum (K-6 curricula available; contact DEP for copies).

Facilities Management:

- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.
- ✓ Concrete or earthen collars around the wellhead should slope away from well.
- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a Very Small Quantity Generator. The school is currently not registered as a generator of hazardous waste or waste oil. Review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" and register to participate.

Planning:

- ✓ Work with local officials in Warwick to include the school well's IWPA in an Aquifer Protection District Bylaws and to assist you in securing protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at

<http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Grant Program Fact Sheet
- Source Protection Sign Order Form
- Very Small Quantity Generator (VSQG) information